

XVII.—*Natural History Notes from H. M.'s Indian Marine Survey Steamer 'Investigator,' Commander, ALFRED CARPENTER, R. N., D. S. O., Commanding. No. 12. Descriptions of some new and rare species of Fishes from the Bay of Bengal, obtained during the season of 1888-89.—By ALFRED ALCOCK, M. B. (ABER.), Surgeon-Naturalist to the Survey.*

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(With Plate XXII.)

The fishes described in this paper were taken by the trawl during the last season's survey work on the East Coast of the peninsula. There are in all ten species, of which seven are new to science, while the remaining three appear for the first time as Indian fishes.

One only is a strictly shore fish; the others were obtained in depths ranging from 25 to 68 fathoms, most of them in the greater depth.

The deep-sea forms met with by the 'Investigator' will be considered separately; but from this present account of the produce of a few occasional hauls of the trawl, made, when time permitted, in the course of delimiting the hundred-fathom line, it will be seen how rich and how full of promise are the extra-littoral waters of India.

Though the fishes now described are from the off waters of the East Coast, some of them were met with in other localities, and these localities are also recorded.

Family PERCIDÆ.

An *Apogon*-like fish, near *Chilodipteus*, *Pomatomus*, and *Scombrops*, its closest resemblance being to the last, was taken on two occasions in moderate depths. It is distinguished from *Scombrops* most conspicuously by the structure of the spinous dorsal, and of the preoperculum. In recognition of its nearest alliance I propose the name *Parascombrops*, diagnosed by the following characters.

Seven branchiostegals. Jaws with canines: villiform teeth on palate and vomer: tongue smooth. Two separate dorsal fins, the first with 9 spines. Anal with 2 spinos. Operculum naked, with weak spinos. Preoperculum with a double serrated edge. Scales large and deciduous. Pseudobranchiæ.

PARASCOMBROPS PELLUCIDUS, g. et sp. nov., Pl. XXII, Fig. 1.

B. 7. D. 9½. A. 8. L. lat. circ. 23. Cæc. pyl. 5. P. 17. V. 1/5. C. 24.

Body rather elongate and compressed; its height a little more than one-fourth the total. Head compressed and somewhat angular, with

well-developed muciferous cavities: its length (excluding a membranous extension backwards of the operonulum) $3\frac{1}{2}$ in the total. The lower-jaw is strongly prominent, with a strong sub-symphysial knob, which forms the tip of the snout. Preoperculum with a double border: the outer border recurved at its angle and strongly serrated there and along its horizontal limb; the inner with three small spines at its angle. Operonulum naked, with two weak spines; its angle has a membranous extension backwards to the level of the anterior third of the pectoral fin. Snout, with the projecting lower jaw, as long as the eye, which is $3\frac{1}{2}$ in the head as above limited. Interorbital space narrower than the eye, nearly flat from side to side, and marked with obliquely converging lines which bound the muciferous cavities of the skull. Nostrils large.

Cleft of mouth very oblique, and wide: the mandibles emarginate on either side of the symphysis. Villiform teeth in premaxillæ, vomer, palatines, and front of mandibles: in addition, a pair of strong fang-like canines anteriorly in the upper jaw, and four large and five or six small upstanding recurved teeth on each side of the lower, and a single similar tooth of medium size near the symphysis. Gill-cleft wide: gill-rakers close-set, numerous, and nearly half as long as the eye. Scales excessively deciduous: one from the abdomen is $\frac{3}{10}$ of an inch in diameter, with a vertical, crenated posterior edge. The dorsal fins are separated by an interspace equal to three-fourths the length of the eye: the spinous is considerably the higher: the 1st spine is small, the 3rd is the longest and is equal to two-thirds of the body height, the 4th is nearly as long. The 1st anal spine is short, the 2nd as long as the eye. Caudal forked almost to its base, forming two distinct lobes. Pectoral delicate; its length equals the distance from the tip of the snout to the anterior pre-opercular edge. Ventral long, reaching two-thirds of the distance to the anal: its spine is long, having its outer edge set-close with small uniform recurved spines. Colours in life, transparent light brown suffused with the pink reflex of the great vessels: opercular and visceral regions like burnished silver.

Total length $3\frac{3}{10}$ inches. The intestine is long and much coiled; and there are five very large pyloric cæca.

Taken in 68 fathoms 16 miles east of the Devi mouth of the Mâhâ-naddi delta. A similar sized female specimen with ripe ovaries was taken in 65 fathoms (temperature 62° Fahr.) in Lat. $20^{\circ} 18' N.$, Long. $90^{\circ} 50' E.$

Family SCORPENIDE.

Two species of *Sebastes* were obtained in less depths than the above. One of them appears to be *Sebastes serrulatus*, (Richardson); and I venture to describe it under that name.

SEBASTES SERRULATUS. Pl. XXII, Fig. 2.

Richardson, Report on the Ichthyology of the Seas of China and Japan, p. 215 ;
Günther, Cat. ii., 106.

D. $12\frac{1}{5}$. A. $\frac{3}{5}$. L. lat. circ. 45 ; P. 15. V. $1\frac{1}{5}$. C. $3\frac{1}{4}\frac{3}{8}$.

Body compressed ; its height $3\frac{1}{2}$ in the total, and equal to the length of the head. Head uniformly scaly, with all its crests low and crenated. Preorbital edge crenate ; preopercular border dentate ; operculum with a single weak spinous point. The occipital and temporal regions are traversed each by a rugose ridge ; and the cheek is crossed, from preorbital to pre-opercular angle, by a broad double-crested crenate ridge. Snout deep with a narrow excavation between the premaxillæ : its length is equal to that of the eye, which is $3\frac{2}{5}$ in the head-length. The interorbital space is a deep scaly furrow ending anteriorly in a pit. The supraorbital ridge is three crested, the edge of each crest being crenated. Cleft of mouth very oblique. The maxilla reaches beyond the level of the middle of the eye ; its hinder expanded end is scaly, and its anterior two-thirds has a median longitudinal upstanding serrated crest.

Each limb of the lower jaw is traversed by three parallel serrated crests with scaly interspaces. Tongue free. Villiform teeth in the jaws and on the projecting head of the vomer : none on the palate. Gill-opening wide : the last gill-cleft is reduced to a small forameu. Scales very thick, of moderate size, bluntly-ctenoid on the back and sides, cycloid on the abdomen. The first two and the third and fourth dorsal spines are isolated : the first is short ; the third, fourth, and fifth are of equal length—two-fifths of the head. The soft dorsal is separated from the spinous by a deep notch ; its middle rays are half the length of the head ; its last ray is double. The 3rd anal spine is the longest and strongest. The length of the caudal is a little more than one-fourth the total. The pectoral is broad and long with a scaly base : it reaches as far as the posterior edge of the base of the anal. The ventral rays are equal in length to the anal. Colours in life, bright scarlet, with a series of five indefinite transverse red-brown bands not reaching the abdomen : a large iridescent dark-blue circular patch on the operculum : pectoral rays bright yellow : irregular rows of dark brown blotches on the fins. Length, $4\frac{1}{5}$ inches.

One specimen taken off Ganjam in 23 fathoms, on a soft bottom.

SEBASTES MUCIPARUS, sp. n., Pl. XXII, Fig. 3.

B. 7. D. $12\frac{1}{5}$. A. $\frac{3}{5}$. L. lat. 70. P. 19. V. $1\frac{1}{5}$. C. $2\frac{1}{16}\frac{1}{1}$.

Height of body $3\frac{1}{4}$, length of head about 3, in the total. Snout sharp, as long as the eye, which is $3\frac{2}{5}$ in the head-length ; with a wide

inter-maxillary notch, into which the knobbed symphysis of the lower jaw fits. A pair of upstanding nasal spines, and a pair of short nasal filaments. The pre-orbital margin has four spiny points; the preopercular margin four sharp spines and a short filament; and the operculum two diverging bony stays ending in flat spines. The interorbital space narrows in the middle, where its width is only half an eye-length; along its floor is a median groove with serrated edges. The supra-orbital ridge is sharp and salient, with four large reverted spines, and with a short supra-ocular filament below. Two sharp reverted spines, one behind the other, in the occipital region; and a row of three in the temporal region. A strong ridge, with six similar spines, extends across the cheek. Cleft of mouth oblique; the maxilla, which is naked, reaches the vertical from the hinder margin of the orbit. Villiform teeth in both jaws and on the very strongly projecting head of the vomer: none on the palate. Tongue free. A large muciferous canal, with several distant large circular openings, extends along the free margin of the preoperculum and the limb of the lower jaw up to the symphysis. Gill-opening wide. One strong humeral spine.

Scales ctenoid; small, and becoming very minute on the head and abdomen. The lateral line shows as 22 double keel-like spines. 1st dorsal spine very short; the 4th and 5th are the longest and strongest—equal to $\frac{5}{12}$ the body height in length: the middle rays of the soft dorsal are equal to half the body height. 1st anal spine very short, the 2nd stout, the 3rd the longest, but slender. The length of the caudal is about $4\frac{1}{3}$ in the total: that of the pectoral is a little greater than the body height. The ventral spine is very strong. Colours: body and fins bright red: a series of four transverse broad dark bands across the back and sides, and irregular rows of dark-red and brown spots on the fins: a black blotch in the posterior part of the spinous dorsal. Total length, $3\frac{3}{4}$ inches.

Captured 26 miles N. by E. of Gopalpur in 45 fathoms: bottom mud.

One specimen.

MINOUS INERMIS, sp. n., Pl. XXII, Fig. 4.

B. 7. D. $1\frac{1}{2}$. A. $1\frac{1}{10}$. P. 11/1. V. $1/5$ C. 13.

Distinguished by feeble armature of head, and flexible spines.

Head and body much compressed. Height of body about one-fourth, length of head about one-third of the total. Edge of pre-orbital with two short flat diverging spines. Preoperculum with a spine at its angle, and dentations along its lower edge. Operculum with two weak diverg-

ing stays not, or hardly, projecting as spines. A low creuate ridge across the check; and a similar ridge across the occipital, and another across the temporal region. Snout as long as the eye, or one-fourth the length of the head. Interocular space narrower than the eye; with a median longitudinal groove; and bounded by thin sharp creuate supra-orbital ridges.

Cleft of mouth wide and oblique. The maxilla is much expanded behind. A barbel about the middle of the limb of the lower jaw. Villiform teeth in the jaws and palatines. Gill-opening wide: the posterior gill-cleft is a small foramen. Gill-rakers close-set and numerous. Integument comparatively thin, without scales: it invests all the fins. The lateral line shows as 17 to 18 tubular papillæ. All the fin-rays are simple. Dorsal fins continuous, the soft portion being the higher: all the spines are weak and flexible, the 1st being very small. Anal spines hidden, the 1st being visible only on reflecting the skin. Caudal about one-fifth of the total length. Pectoral as long as the head: its free filament reaches to the 3rd anal ray. Ventral nearly half as long as pectoral. Colours in life:—rosy red with white and gray mottlings and minute black dots; throat and barbels white; pectoral, ventral, and anal fins edged with black. Total length $2\frac{3}{4}$ inches.

Taken in 70 fathoms, east of the Sacramento shoal on the Godávari coast.

Two specimens; the body of one of them almost completely invested by a colony of hydroid polyps (*Podocoryne*, sp.).

Family SCLENIDÆ.

SCLENA OPHICEPS, sp. n.

D. $10\frac{1}{27}$ A. $\frac{2}{7}$ L. lat. $\frac{60}{50}$ L. Tr. $\frac{6-7}{16-18}$ (usually 16).

P. 20. V. $1\frac{1}{5}$. C. 17.

Body elongate low and compressed; head long low and pyramidal. The dorsal profile makes a straight ascent, at an angle of about 23° , from the tip of the snout to the first dorsal spine, and thence abruptly makes an almost straight descent, at an angle of about 10° with the horizon, to near the base of the caudal. Height of the head equals its length of head $3\frac{2}{3}$ to $3\frac{5}{8}$, in the total. The height of the head equals its length behind the middle of the orbit. The snout is acutely pointed; its length is equal to a diameter and a half of the eye, which is $5\frac{2}{3}$ in the head-length; not overhanging the mouth. The upper jaw overlaps the lower, so that when the mouth is shut the anterior canine-like teeth project like fangs. The tip of the snout has three large pores, and a free bi-lobed flap of skin with a wide pocket-like pore between the lobes, each

lobe with a similar pore. The interorbital space is nearly flat from side to side, and as broad as the eye is long. Nostrils large. Mouth oblique; the maxilla reaches the vertical from the posterior border of the orbit. Lips thick, and beset with filiform papillæ, the upper lip most thickly so. Villiform teeth in both jaws: in the premaxillæ an outer row of sharp curved teeth of which the anterior four are canine-like; in the mandibles an inner row of distant sharp conical teeth. Preopercular margin finely serrated, with some small spiny teeth at its angle: two weak opercular points. Gill-rakers on the inner edge of first arch bacillate; on the other arches in the form of sharply-toothed double-crowned tubercles. Scales ctenoid, except on snout and infra-orbital. All the dorsal spines weak and flexible; the 1st very small, the 3rd and 4th the highest and equal to nearly half the body height. 1st anal spine almost invisible; the 2nd a little longer than the eye, and not half the length of the rays. Pectorals large and falciform, in length equal to the head without the snout, or to the body height. Ventrals two-thirds the length of the pectorals. Caudal a sharp-pointed wedge; its length $5\frac{1}{2}$ to $5\frac{3}{4}$ in the total. Colours in life: back silvery shot with metallic green and red; belly like burnished silver: a blue blotch on operculum; pectorals yellow, the other fins grey suffused with orange. The stomach with its cæcum occupies nearly the whole length of the abdominal cavity: its walls are very thick, and in addition to the simple tubular follicles of the mucosa, there are some coiled tubular glands in the submucosa. There are six pyloric appendages. The air-bladder is large and strong, with a long terminal spur and 28 lateral arborescent appendages on each side.

The largest specimen is 11 inches long.

Localities: off the Máhánaddi delta in 5 to 9 fathoms; and off the Godávári delta in 4 to 5 fathoms.

Family TRACHINIDÆ.

An *Uranoscopus* which agrees in almost every detail with *Uranoscopus cognatus* (Cantor) was taken at two or three stations near shore; and *Champsodon vorax* (Gthr.) was found three times in deep water.

URANOSCOPUS COGNATUS.

Cantor, Catalogue of Malayan Fishes, p. 21, (or J. A. S. B. Oct. 1849, p. 1003); Günther, Cat. ii, 227.

Our specimens have not the pectoral rays tipped with scarlet; and the 15th dorsal ray seems to be only a branch from the base of the 14th. Some have a small supra-ocular filament. There are 24 vertebræ. The

opercular border is completed by a tough membranous extension upwards of the suboperculum. Of the three pairs of spines beneath the lower jaw, the anterior are the sharp ends of the clavicles, and the others are processes from the pubic bones. A specimen dissected had the ovaries much enlarged, the ova being $\frac{1}{30}$ of an inch in diameter.

Length of largest specimen, $5\frac{3}{4}$ inches.

Localities: Off False Point, in 10 fathoms: 28 miles S. W. of Puri, in 25 fathoms: 5 miles south of Ganjam, in 25 fathoms.

CHAMPSODON VORAX.

Günther, Proc. Zool. Soc., 1867, p. 102; and Zool. Challenger, vol. i, pt. vi, pp. 52, 43, and 56, pl. xxiii, fig. A, and vol. xxii, p. 49.

Our specimens all have the radial formula D. 5/21, A. 19. There is a pair of sharp diverging spines on each pre-orbital margin, and a similar pair on the lower border of the prooperculum. Two parallel ridges pass from the snout, above each eye, to the occiput, where they diverge to terminate in a sharp bifid spine on the tympanic region. There are transverse rows of small milk-white (in spirit) papillæ on the head and body. Diameter of scales $\frac{1}{10}$ inch, the free edge with four or five sharp teeth about two-thirds the diameter of the scale in length. Colours in life:—dorsum metallic green; belly silvery: spinous dorsal black: caudal with a dark base and black edge.

Total length of the largest specimen 5 inches.

Localities: 16 miles E. of mouth of Devi river in the Máhánaddi delta, in 68 fathoms: [Bay of Bengal, Lat. 20° 18' N. Long 90° 50' E., in 65 fathoms, bottom temperature 65° Fahr.: 40 miles S. W. Akyab, in 100 fathoms, bottom temperature 62° Fahr.]. In the 'Investigator' collection from the Malabar coast is a single specimen an inch and a half long, taken in 28 fathoms.

Family PEDICULATI.

Specimens of a small *Lophius* were taken on one occasion in a moderate depth. It bears a close resemblance to *L. setigerus* (Wahl), but I am unable to identify it with the descriptions of that fish, and propose to regard it as a distinct species.

LOPHIUS INDICUS, sp. n.

D. 3/3/8. A. 6-7. C. 8. P. 23. V. 5.

Cephalic disk enormous; half the total length, including caudal; its vertex studded with spinous tubercles, and its margin completely fringed with skinny appendages which are continued along the middle

line of the body and tail to the base of the caudal. Long diameter of the eye about one-tenth the head length. The supra-orbital margin prominent, with two large simple spines. Interorbital space concave; two eye-lengths in breadth. Mouth as broad as the disk: the anterior part of its floor, with the tongue and upper surface of the branchial arches, coloured like the body. Teeth sharp and depressable inwards: in two series in the upper, three in the lower jaw, the outer series in both jaws being very small. Two teeth on each side of the vomer, and three or four in a row on the palatines. Gills three. Branchiostegals five. Humeral spine bifid. First dorsal spine slender, naked, and ending in a tuft: the second with a fringed edge: the third bristle-like.

Colours in life: dorsum dark grey reticulated with narrow black vermicular lines: belly and throat colourless. The stomach is a globular sac; the intestine long and coiled; and the two pyloric appendages very large and long. Total length; $1\frac{3}{4}$ inches.

Locality: 5 miles S. of Ganjam, in 25 fathoms, on a clean sandy bottom.

Among the 'Investigator' collections is a specimen of this fish $3\frac{3}{8}$ inches long, taken in 23 fathoms off the Malabar coast. In this specimen the humeral spine has two smaller diverging spines at its base.

Family COTTIDÆ.

PRIONOTUS ALEPIS, sp. n., Pl. XXII, Fig. 5.

This little fish seems to be very closely allied to *Prionotus birostratus* (Richardson), from which it differs in having a scale-less integument. Before describing it, its points of community with *P. birostratus* may be reviewed, after Jordan and Hughes' scheme (Proc. U. S. Nat. Mus. 1886, vol. ix, pp. 327-338).

Dorsal spines 10, rays 13; anal rays 11. Mouth comparatively large, the maxilla being two-fifths of the head-length, and the mandible extending to the vertical from the front edge of the eye. No cross groove on the top of the head. Free rays of pectoral tapering, and not expanded at the tip. Black patch on spinous dorsal diffused over more than two spines, and not ocellated. Preopercular spine with a distinct smaller one at its base. Gill-rakers slender and tapering.

Pre-orbital produced beyond the snout. Spines on the head well-developed. Pectoral fins truncated.

Description.

D. 10/13. A. 11. P. 12/3. V. 1/5. C. 20.

Head of enormous relative size, being longer (caudal excluded), higher, and wider than the compressed body. Outline of the body triangular, with a crescentic expansion at the base of the caudal. Snout

bill-shaped, with two horizontal, advanced, serrated horns formed by the prolongation of the preorbitals, and with a strong median knob. The eyes, which are rather more than two-sevenths the length of the head, diverge from one another behind, where they are a little more than a diameter apart. The concave interorbital space is bounded by prominent sharp supra-orbital margins, in the middle of which is a broad upstanding spine with recurved tip. On each side of the origin of the spinous dorsal is a sharp serrated occipital spine, as long as the eye. Operculum with a transverse ridge ending in a small spine. Preoperculum with two spines at its angle, one behind the other; and three dentations along its lower border. Mouth large and broad. Minute teeth in jaw, palate, and vomer.

Gill-openings wide: the branchiostegals a good deal uncovered by the operculum, in repose. Gill-rakers close-set; in form like long pointed bristles. No scales. The lateral line, which consists of 16 close-set prominent tubes diminishing in size from before backwards, extends only as far as the vertical from the 1st dorsal ray. The spinous dorsal is higher than the soft; the 2nd, 3rd, and 4th spines are the strongest and highest, being rather over half the height of the head. The anal rays are longer than the soft dorsal rays. The caudal is very large, deeply forked, and half as long as the head. The pectoral reaches as far as the base of the last anal ray; and the first free ray nearly as far. The ventral is four-fifths the length of the pectoral: its spine is very strong and sharp. Colours in life: body light sea-green with two irregular lines of purple-brown blotches along the dorsum: head mottled with tortoise-shell, green, and blue: spinous dorsal light brown, with an oval black patch extending from the third to the sixth spines: soft dorsal transparent grey, traversed by an oblique dark band: anal ventrals and caudal transparent grey, the last with a V-shaped dark band at its base. Pectorals mottled and blotched with green, brown, orange, and yellow: their free filaments rosy red.

Two specimens, the longer of which is $1\frac{7}{8}$ inch.

Taken in 68 fathoms, 16 miles east of the mouth of the Devi river in the Máhánaddi Delta.

The discovery of a *Prionotus* in the Indian Seas is highly interesting.

Family MURENIDÆ.

In the same very productive 68 fathoms haul a most curious Murenid was obtained. In Dr. Günther's scheme (Günther, Cat. viii, 19-20), it would come between the *Myrina* and the *Ophichthyina*, having a dentition similar to some Ophichthyines, with a Myrine tail. Its most peculiar character is found at the tip of the snout, where there is a boss

of bone, formed apparently by an expansion of the premaxillaries, covered with teeth. I do not think this fish can be placed in any hitherto established genus; and I propose for it the generic name *Bathymyrus*, with the following diagnosis (after Dr. Günter's scheme) :—

Branchial openings in the pharynx are wide slits. Tail longer than the trunk. Heart situated immediately behind the gills. Muscular and osseous systems well-developed. Gill-openings separated by an interspace. Nostrils labial. Tongue not entirely free. End of the tail surrounded by the fin. Pectorals well-developed. Dorsal fin commencing immediately behind the gill-opening. Teeth in the jaws uniserial. Inter-maxillary forming the end of the snout.

BATHYMYRUS ECHINORHYNCHUS, gen. et sp. n., Pl. XXII, Fig. 6.

Body cylindrical anteriorly, compressed posteriorly. Tail longer than the body by one-half. Head, excluding the branchiostegal region, one-seventh of the total: cylindrical, tapering slightly: the muciferous cavities well-developed. The snout projects beyond the lower jaw; it is as long as the eye, which is one-fifth of the head as above limited; and its tip is formed by a massive upward and lateral expansion, studded with small curved teeth, of the premaxillaries. The nostrils are in contact with the margin of the upper lip; the anterior being tubular and situated near the end of the snout, the posterior being valved and placed in front of the lower border of the eye. The gape of the mouth extends a little behind the vertical from the posterior border of the orbit. There is a single series of close-set, uniform, small sharp teeth in the maxillæ and in the mandibles: a few similar teeth on the vomer at its junction with the premaxillaries, and a cluster of sharp down-curved teeth on the extra-oral rostral expansion of the premaxillaries. The tongue is long and attached up to its tip by an extensible frenum. The gill-openings extend obliquely from the upper edge of the base of the pectoral almost to the middle line of the abdomen, where they are separated by a narrow interspace. The gill-laminae are long, coarse, and cylindrical. The branchiostegal region is one-third the length of the head. There is an oblique bony stay across the operculum. The integument is scaleless. The pectorals are longer than the greatest body height. The dorsal begins above the origin of the pectorals. The caudal is well-developed, confluent with the vertical fins, and with a truncated tip. Colours in life, transparent grey with numerous minute specks of black.

Total length of the single specimen $10\frac{1}{2}$ inches.

Locality: 16 miles east of the mouth of the Devi river in the Mâhâ-naddi delta in 68 fathoms.

I have to record my deep obligations to Professor Wood-Mason for the advice and help which he has so kindly given me in all my work.

